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ABSTRACT

This study investigates the effect of videotaping on the ability of student teachers to involve their pupils in lessons. Forty-nine students were randomly divided into three subgroups over a period of two quarters. The first subgroup was exposed to concentrated videotaping for two 30-minute sessions per week for 10 weeks. The second subgroup was exposed to videotaping for two 30-minute sessions per week for five weeks. The third subgroup was not exposed to videotaping. Two campus supervisors simultaneously observed and evaluated each of the 49 students three times. These evaluations were subjected to statistical analysis leading to the following conclusions: (a) there was no significant difference between pupil involvement levels for any of the subgroups; (b) pupil involvement levels did not differ significantly during any of the six observational periods; (c) the total group exposed to videotaping for 10 weeks did not differ significantly between and among the observational periods, but individuals did differ significantly as the quarter progressed; (d) the total group exposed to videotaping for five weeks did not differ significantly between and among the three observational periods, but the individuals did differ significantly as the quarter progressed; and (e) the total group exposed to no videotaping did not differ significantly between and among the three observational periods, nor did the individuals differ significantly as the quarter progressed. (A 7-item bibliography is included.) (PD)

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# VIDEO-TAPING FOR STUDENT TEACHERS?

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# VIDEO-TAPING FOR STUDENT TEACHERS?*

## Introduction

It is common practice, today, to use video-taping as a means for student teachers to evaluate their teaching performances. Student teachers may be video-taped as they present lessons to an entire class, to a small group of students, or in a micro-teaching situation. Aside from its obvious value in self-evaluation, various studies have found a combination of techniques, such as video-taping and micro-teaching, to be helpful in promoting the effective performance of student teachers (1) (2) (3). Usually, however, investigations based upon the use of video-tape employ pre and post-test design or a limited number of filmings of pre-student teachers in structured situations (4). The question arises as to what effect a concentrated program of video-taping might have in altering the observable classroom behavior of elementary student teachers in team teaching situations. The present study represents an investigation of this question.

In almost every study concerning change in the teaching performance of student teachers, measurement of possible change is made through observational techniques. One study, of similar title, uses verbal communications as a measurement device, based upon analysis of pre-test and post-test video-tapes for ten student teachers (5). Reference to the literature indicates that many studies have been made involving measurement of behavioral changes exhibited by the student teacher after exposure to one or

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more experimental treatments (6). Using a different approach, Aspy developed a procedure based upon the involvement of students as a measure of teacher effectiveness (7). This procedure was adopted and changed to the observational form used as a basis for measuring the effectiveness of student teacher performance in this study (form presented later).

## PURPOSE AND PROCEDURES

The purpose of this study was to investigate the effect of concentrated video-taping of student teachers as they taught their lessons, upon the ability of those student teachers to involve their pupils in active participation during the lessons. Stating it differently, were varying amounts of video-taping of student teachers related to more active participation of their elementary pupils during the concerned lessons? A decision was made to perform the investigation in an elementary school Teacher-Learning Center located in the City of Toledo, Ohio. Approximately twenty-four student teachers are assigned to this Center every academic quarter, that is, fall, winter, and spring quarters. A full-time university campus supervisor is assigned to the Center for all three quarters. The campus supervisor provides in-service sessions for the teachers in the school and supervises the twenty-four student teachers. In most cases, two student teachers are assigned to one classroom teacher, in order to promote team teaching within a self-contained classroom.

Within the school, there are two self-contained classrooms at the kindergarten level, the third grade level, and the fifth grade level. There are three self-contained classrooms at the first grade level, the second grade level, and the fourth grade level. In all, the school contains fifteen classrooms and fifteen teachers, supervised by a building

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Principal. The university campus supervisor is assigned an office and a television viewing room where student teachers review the video-tapes of their performance.

Each student teaching quarter is of eleven weeks' duration, and this investigation was performed over a period of two quarters. In most cases, two student teachers are assigned to one classroom teacher, thus setting the stage for the development of differentiated staffing and various forms of team teaching. During the first quarter, twenty-five student teachers were assigned to the school, and during the second quarter, twenty-four student teachers were assigned. Through a process of random selection, these groups were each divided into three sub-groups. Each of the students in the first sub-group was to be video-taped for two one-half hour lessons per week for a period of ten weeks. This would be done at any time and the student had no way of knowing the day and hour during which this was to occur. Each of the students in the second sub-group was to be video-taped for two one-half hour lessons per week for a period of five weeks beginning with the first week of student teaching. Again, the students had no way of knowing when the video-taping was to occur. The students in the third sub-group were not video-taped at any time. The same processes of random selection were used for student teachers in the second quarter at the school.

During the first quarter there were nine student teachers exposed to ten weeks of video-taping, eight student teachers exposed to video-taping for the first five weeks of the quarter and eight student teachers who were not exposed to any video-taping. During the second quarter there were nine students exposed to ten weeks of video-taping, seven students exposed to video-taping for the first five weeks of the quarter and eight students

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who were not exposed to any video-taping. Critic teachers having student teachers in one sub-group were assigned student teachers in one of the other two sub-groups for the second quarter; for example, if Mrs. Jones had a 10-week video-taped student the first quarter, she had a 5-week or zero-week student the next quarter.

Actual video-taping was handled by university staff connected to the Multi-Media Center, and scheduling was set up by the campus supervisor and the school principal. Portable television equipment was installed in the school and students were able to review their tapes at any time which was available to them. A portable throat microphone was used, allowing students to move about easily in the performance of a lesson. The equipment was rolled from room to room and the children did not seem to be distracted by the presence of the equipment.

The campus supervisor in the school did not take part in the evaluation procedures. Two other campus supervisors were trained in using the scale adopted for this study, and after reaching proficiency of agreements in results, observed each student teacher a total of three times. This was done during the second, sixth, and tenth weeks of each quarter. The two campus supervisors typically waited about five minutes after the lesson was started and then, together, began their observation of the children in the room. Taking positions on different sides of the room, the campus supervisors made separate decisions as to the number of children involved in each of the five involvement levels of the scale. To clarify this operation, a copy of the scale is presented below.

SCALE

It is assumed that one of the characteristics of effective teaching is involvement of the learner in the activity at hand. Clearly, many

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Office of Student Teaching

## PUPIL INVOLVEMENT RECORD

Student Teacher _____ Date _____

Supervising Teacher _____ School _____

Number of Pupils _____ Minutes Observed _____ Subject and/or Grade Level _____

NUMBER OF PUPILS IN EACH LEVEL OF PUPIL INVOLVEMENT

| Levels | First 5 Minutes | Second 5 Minutes | Third 5 Minutes | Fourth 5 Minutes |
|---|---|---|---|---|
| First | | | | |
| Second | | | | |
| Third | | | | |
| Fourth | | | | |
| Fifth | | | | |

Comments:

### *PUPIL INVOLVEMENT SCALE

Level 1 The pupil is not involved in the classroom activity. He either looks bored or is involved in some activity unrelated to the class activity though he may be quite involved in what he is doing.

Level 2 The pupil participates in the class activity about half of the time. That is he is in and out of the class activity and even when he is in the activity he shows no enthusiasm for it.

Level 3 The pupil participates in the class activity most of the time but only within the prescribed rules....He could be generally described as "going along with the game."

Level 4 The pupil participates in the class activity most of the time and demonstrates enthusiasm for it. He seems excited about (or is consistent in) what he is doing but he sticks pretty much to the rules established by the teacher.

Level 5 The pupil participates in the class activity most of the time and demonstrates creative enthusiasm for it. He goes beyond the limits set by the teacher and explores new ideas, questions, activities, etc.

*Adapted from: Aspy, David N., "The Measurement of Student Involvement," Contemporary Education, Indiana State University, School of Education, Terre Haute, Indiana, XLIII, Number 6, May, 1971.

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problems are attendant upon such observations and the observer must develop considerable skill and resourcefulness in order to produce reliable results. The campus supervisors taking part in this investigation spent many hours in practice and comparison of decisions before beginning their classroom observations, and proved their competency to undertake this task. The results of these observations and the findings of the study are presented in the analysis which follows.

## STATISTICAL ANALYSIS

As stated before, there was a randomly selected group of student teachers (N=18) who were exposed to 10 weeks of video-taping. In essence, there were 9 student teachers the first quarter under one set of critic teachers and nine student teachers the second quarter under another set of critic teachers. Thus, when pooling the two sets of student teachers the total N for this method is 18.

There was another randomly selected group of student teachers (N=15) who were exposed to video-taping for the first five weeks of each quarter only. As before, these student teachers were divided approximately equally between the two quarters. Also, the second quarter student teachers had different critic teachers than did those student teachers that were in this method during the first quarter.

There was a third randomly selected group (N=16) who were not exposed to any video-taping what-so-ever. This control group was evenly divided between the first and second quarters and a different set of critic teachers was utilized for each quarter.

### Observations and "scores"

Two experienced observers attempted to observe each student teacher a total of three times--during the second, sixth, and tenth weeks of each

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quarter. Rather than focusing upon the student teachers per se, they observed the involvement levels of the elementary students at 5-minute intervals.

An example of this follows: For student teacher 1104, and for her second observation, and for the first 5-minute period, 8 elementary students were observed to be involved on level 2 and 12 to be involved on level 3. For the second 5-minute period, 3 elementary students were on level 3, 14 on level 3, and 3 on level 4. Mean involvement level scores were obtained for each such full observation and later subjected to statistical analyses. The findings of the student are based upon an analysis of these means. For the example given above, the mean involvement score was

$$\frac{(8 \times 2) + (12 \times 3)}{20} + \frac{(3 \times 2) + (14 \times 3) + (3 \times 4)}{20} = 2.80$$

Consistency of numbers of elementary students per observation by method.

As is commonly the case, student teachers near the beginning of their student teaching experience are generally given a small group of elementary students with whom to work. The group keeps getting larger as the quarter progresses and sometime during the quarter they are put in change of the entire class. In a study such as the present, mostly concerned with involvement levels of the students, there needed to be consistency between the three methods with numbers of elementary students under tutorlege. The investigators did not control for this in an *a priori fashion*, but *ex-post-facto* analyses implied that the three groups of student teachers (10 weeks, 5 weeks, 0 weeks) did not significantly differ in sizes of elementary groups per observational period.

These analyses were accomplished by use of 3 x 3 contingency tables--sizes of the teaching groups (10 or less; 11-19; 20 or more) and the three methods (10 weeks; 5 weeks; 0 weeks). In other words, the sizes of the

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teaching groups did not vary significantly ($.05\chi^2$) across methods for any of the three observational periods.

The Hypotheses

Three major hypotheses were formulated for this study.

1. For each of the three observational periods, no significant differences will exist among the pupil involvement means of the three methods' groups (10 weeks, 5 weeks, 0 weeks).
2. By separating the three methods groups by quarter in which they did student teaching, there will be no significant differences among the six methods' means per observation. (Six groups per observational period: 10 weeks first quarter, 10 weeks second quarter, 5 weeks first quarter, 5 weeks second quarter, 0 weeks first quarter, and 0 weeks second quarter.)
3. There will not be a significant difference among the three intragroup observational means for each method group nor will one method group show more individual variation than another.

The Findings

Tables 1, 2, and 3 present basic data and analysis of variance summary tables for analyses related to the first hypothesis. In these tables, Group 1 refers to the group that was video-taped for a 10-week period, Group 2 refers to the group that was video-taped for the first 5 weeks of each quarter, and Group 3 refers to the non-video-taped group.

Data in Tables 1, 2, and 3 imply that the first null hypothesis should be accepted as tenable; that is, there was no significant difference during any of the observational periods between the pupil

TABLE 1

BASIC DATA AND ANOV SUMMARY TABLE

FOR SCORES DERIVED FROM FIRST OBSERVATIONAL PERIOD

| | | | | ANOV SUMMARY TABLE | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Group | N | $\bar{X}$ | S.D. | Source | df | SS | MS | F | P | Decision |
| 1 | 17 | 3.18 | .33 | Between | 2 | .44 | .22 | 1.23 | p>.20 | N.S. |
| 2 | 15 | 3.35 | .56 | Within | 45 | 8.05 | .18 | | | |
| 3 | 16 | 3.12 | .35 | Total | 47 | 8.49 | | | | |

TABLE 2

BASIC DATA AND ANOV SUMMARY TABLE

FOR SCORES DERIVED FROM SECOND OBSERVATIONAL PERIOD

| | | | | ANOV SUMMARY TABLE | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Group | N | $\bar{X}$ | S.D. | Source | df | SS | MS | F | P | Decision |
| 1 | 17 | 3.12 | .53 | Between | 2 | .46 | .23 | 0.95 | p>.20 | N.S. |
| 2 | 14 | 3.26 | .50 | Within | 44 | 10.57 | .24 | | | |
| 3 | 16 | 3.35 | .42 | Total | 46 | 11.03 | | | | |

TABLE 3

BASIC DATA AND ANOV SUMMARY TABLE

FOR SCORES DERIVED FROM THIRD OBSERVATIONAL PERIOD

| | | | | ANOV SUMMARY TABLE | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Group | N | $\bar{X}$ | S.D. | Source | df | SS | MS | F | P | Decision |
| 1 | 18 | 3.32 | .45 | Between | 2 | .51 | .26 | 1.50 | p>.20 | N.S. |
| 2 | 15 | 3.46 | .43 | Within | 46 | 7.88 | .17 | | | |
| 3 | 16 | 3.20 | .36 | Total | 48 | 8.39 | | | | |

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involvement levels for the three methods groups.

Tables 4, 5, and 6 present data which are related to the second hypothesis. In these tables, Group 1A refers to the 10-week video-taping group for the first quarter; 1B refers to the same method but for the second quarter. The same labeling technique is used for the five-week video-taping group; namely 2A and 2B, as well as for the group having no video-taping, 3A and 3B.

TABLE 4

BASIC DATA AND ANOV SUMMARY TABLE FOR SIX METHODS GROUPS FOR THE FIRST OBSERVATIONAL PERIOD

| | | | | ANOV SUMMARY TABLE | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Group | N | X | S.D. | Source | df | SS | MS | F | P | Decision |
| 1A | 9 | 3.13 | .33 | | | | | | | |
| 1B | 8 | 3.24 | .35 | Between | 5 | 1.90 | .38 | 2.43 | p>.05 | N.S. |
| 2A | 7 | 3.03 | .60 | Within | 42 | 6.59 | .16 | | | |
| 2B | 8 | 3.64 | .34 | Total | 47 | 8.49 | | | | |
| 3A | 7 | 3.07 | .24 | | | | | | | |
| 3B | 9 | 3.16 | .43 | | | | | | | |

The F ratio presented in Table 4 was not significant (F.05 (df = 5.40) = 2.45). The mean for Group 2B (3.64) being somewhat larger than the rest of the means was probably the cause of this almost significant F.

Data presented in Tables 4, 5, and 6 would lead one to conclude that the second null hypothesis should be accepted as tenable--that the pupil involvement levels in the rooms where the student teachers were operating did not differ significantly during any of the six observational periods.

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TABLE 5

BASIC DATA AND ANOV SUMMARY TABLE FOR SIX METHODS GROUPS FOR THE SECOND OBSERVATIONAL PERIOD

| | | | | ANOV SUMMARY TABLE | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Group | N | $\bar{X}$ | S.D. | Source | df | SS | MS | F | P | Decision |
| 1A | 8 | 2.88 | .52 | | | | | | | |
| 1B | 9 | 3.32 | .49 | Between | 4 | 1.38 | .28 | | | |
| 2A | 7 | 3.30 | .40 | Within | 41 | 9.64 | .24 | 1.18 | $p>.20$ | N.S. |
| 2B | 7 | 3.22 | .63 | Total | 46 | 11.03 | | | | |
| 3A | 7 | 3.26 | .40 | | | | | | | |
| 3C | 9 | 3.42 | .45 | | | | | | | |

TABLE 6

BASIC DATA AND ANOV SUMMARY TABLE FOR SIX METHODS GROUPS FOR THE THIRD OBSERVATIONAL PERIOD

| | | | | ANOV SUMMARY TABLE | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Group | N | $\bar{X}$ | S.D. | Source | df | SS | MS | F | P | Decision |
| 1A | 9 | 3.26 | .53 | | | | | | | |
| 1B | 9 | 3.37 | .37 | Between | 5 | 1.59 | .32 | 2.01 | $p>.05$ | N.S. |
| 2A | 7 | 3.19 | .47 | Within | 43 | 6.80 | .16 | | | |
| 2B | 8 | 3.68 | .23 | Total | 48 | 8.39 | | | | |
| 3A | 7 | 3.10 | .44 | | | | | | | |
| 3C | 9 | 3.28 | .27 | | | | | | | |

Tables 7, 8, and 9 present the results of applying a repeated measures analysis of variance to each of the three methods groups. Again, Group 1 was exposed to 10 weeks of video-taping, Group 2 was exposed to 5 weeks of video-taping, and Group 3 was exposed to zero weeks of video-taping. Each group had 3 sets of scores, those from the first observation, those from the second, and those from the

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third. Two F-ratios will be presented in each table, one implying the variation among the individual student teachers' pupil involvement levels (between people) and the other between the means of the three columns of "scores" (treatments).

TABLE 7
BASIC DATA AND REPEATED MEASURES ANOV
SUMMARY TABLE FOR GROUP 1 (10 WEEKS OF VIDEO-TAPING)

| Observation | N | $\bar{X}$ | S.D. | ANOV SUMMARY TABLE | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Source | df | SS | MS | F | P | Decision |
| 1st | 17 | 3.18 | .33 | | | | | | | |
| 2nd | 17 | 3.12 | .53 | Bet. People | 17 | 6.71 | .39 | 4.10 | $p < .005$ | Sig. |
| 3rd | 18 | 3.32 | .45 | Treatments | 2 | .37 | .18 | 1.92 | $p > .10$ | N.S. |
| | | | | Residual | 32 | 3.08 | .10 | | | |
| | | | | Total | 51 | 10.16 | | | | |

Table 7 implies that, in essence, Group 1 did not differ significantly between and among the three observational periods ($F = 1.92$). However, the individual classrooms differed markedly--$F = 4.10$ with the probability of rejecting a true null hypothesis being less than 5 in 1,000 (½%).

Tables 8 and 9 present data and analyses similar to those in Table 7 but related to Groups 2 and 3 respectively.

TABLE 8
BASIC DATA AND REPEATED MEASURES ANOV
SUMMARY TABLE FOR GROUP 2 (5 WEEKS OF VIDEO-TAPING)

| Observation | N | $\bar{X}$ | S.D. | ANOV SUMMARY TABLE | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Source | df | SS | MS | F | P | Decision |
| 1st | 15 | 3.35 | .56 | Bet. People | 14 | 7.43 | .53 | 5.04 | $p < .001$ | Sig. |
| 2nd | 14 | 3.26 | .51 | Treatments | 2 | .29 | .14 | 1.35 | $p > .20$ | N.S. |
| 3rd | 15 | 3.46 | .43 | Residual | 27 | 2.85 | .11 | | | |
| | | | | Total | 43 | 10.56 | | | | |

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TABLE 9

BASIC DATA AND REPEATED MEASURES ANOV

SUMMARY TABLE FOR GROUP 3 (0 WEEKS OF VIDEO-TAPING)

| Observation | N | $\bar{X}$ | S.D. |
|---|---|---|---|
| 1st | 16 | 3.12 | .35 |
| 2nd | 16 | 3.35 | .42 |
| 3rd | 16 | 3.20 | .36 |

ANOV SUMMARY TABLE

| Source | df | SS | MS | F | P | Decision |
|---|---|---|---|---|---|---|
| Bet. People | 15 | 2.06 | .14 | 1.00 | p>.20 | N.S. |
| Treatment | 2 | .44 | .22 | 1.50 | p>.20 | N.S. |
| Residual | 30 | 4.37 | .14 | | | |
| Total | 47 | 6.86 | | | | |

It can be observed from data presented in Tables 7, 8, and 9 that all three treatment F's were non-significant. This implied, in essence, that each group did not improve in pupil involvement levels as the quarters progressed. This is in some respects misleading, however, because teaching formats changed, in general, from 1st to 2nd observations and from the 2nd to the 3rd. As was implied before, the student teachers near the end of the quarter (3rd observation) were generally in charge of larger groups than they were during the earlier observations.

A very interesting finding, however, is the F's related to between people differences. Both video-taping groups had highly significant F's in this regard while the non-video-taping groups had an insignificant F. This would seem to imply that the two video-taping groups had much more individual variations than did the non-video-taping group. Saying it differently, the video-taped groups were heterogenous while the non-video-taped group was quite homogenous. The various standard deviations reinforce this conclusion, also.

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## CONCLUSIONS

This study investigates the effect of video-taping upon the ability of student teachers to involve their pupils in the lessons which were presented. A total number of forty-nine student teachers were assigned to one Teacher Learning Center during a time period of two consecutive academic quarters, with twenty-five assigned in the first quarter and twenty-four assigned in the second quarter. The twenty-five student teachers assigned during the first quarter were randomly divided into three sub-groups, and the twenty-four student teachers assigned during the second quarter were also randomly divided into similar sub-groups. The first sub-group in each quarter was exposed to concentrated video-taping for two one-half hour sessions per week for ten weeks. The second sub-group in each quarter was exposed to video-taping for two one-half hour sessions per week for five weeks. The third sub-group in each quarter was not exposed to video-taping at all.

Two campus supervisors, experienced in using the involvement scale previously presented, simultaneously observed and evaluated each of the forty-nine student teachers three times. This was done during the second, sixth, and tenth weeks of each quarter, with five minutes allowed for each observation. These evaluations were then subjected to statistical analysis, leading to the following conclusions:

1. There was no significant difference during any of the observational periods between the pupil involvement levels for any of the sub-groups.

2. The pupil involvement levels in the rooms where the student teachers were presenting lessons did not differ significantly during any of the six observational periods.

3. The total group exposed to video-taping over a ten week period (N=18) did not differ significantly between and among the observational periods, but the individuals in the group did differ significantly as the quarter progressed.

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4. The total group exposed to video-taping over a five week period (N=15) did not differ significantly between and among the three observational periods, but the individuals in the group did differ significantly as the quarter progressed.

5. The total group exposed to no video-taping over a ten week period (N=16) did not differ significantly between and among the three observational periods, nor did the individuals in the group differ significantly as the quarter progressed.

Although the central hypotheses of this study were not supported by the findings, it is interesting to note that the individuals in each of the groups which were exposed to video-taping were found to differ significantly in their ability to involve pupils in the lessons which were presented. This difference was not found in the group which was not exposed to video-taping.

It is possible that video-taping was indeed effective in helping some individuals develop the ability to actively involve their pupils in the lessons at hand. If pupil involvement is recognized as an important instructional objective, it may be speculated that further research should be performed which may provide clues as the characteristics and personal qualities of individuals who might profit from concentrated exposure to video-taping of classroom performance.

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